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Agricultural Biotechnology Annual

Colombia continues to expand its biotechnology frontier

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Report Highlights:
Biotechnology in Colombia has continued to develop over the last year. The adoption rate of genetically engineered (GE) corn has surpassed GE cotton. The Government of Colombia (GOC) Ministry of Health and Social Protection (MHSP) continues to develop a biotechnology regulatory framework with a Technical Annex to supplement Resolution 4253 of 2011. The Technical Annex will be issued in late 2013 and will establish requirements for labeling foods derived from modern biotechnology, identification of raw materials and low level presence (LLP) thresholds.

Section I. Executive Summary:

Colombia is a key Latin American market for U.S. agricultural products with export values over US$1 billion in 2012. The implementation of the U.S.-Colombia Trade Promotion Agreement (CTPA) has opened the market for increased trade opportunities between the two countries. U.S. exports in products

derived from biotechnology or genetic engineering such as corn, cotton, soybeans and soybean meal were valued at over US$300 million in 2012.

The Colombian legal framework for agricultural biotechnology regulations is under continual review. Colombia approved the Cartagena Protocol on Biosafety (CPB) in 2002. In 2005, Decree 4525 was published to implement the CBP and since then several other Ministerial resolutions were published to outline specific requirements and procedures for approving and using GE products in Colombia. Colombia's biotechnology regulations are regularly reviewed and revised, which provides opportunities to engage GOC regulatory counterparts with training activities to facilitate the adoption of science-based regulations. The GOC has created three technical biotechnology committees to analyze environmental, biosafety and food safety impacts of biotech-derived products (see Part B, Policy). The MHSP issued resolution 4254 establishing the requirements for labeling of foods derived from modern biotechnology. The resolution entered into force at the end of June, 2012. In addition to the resolution, the GOC is working on a Technical Annex which supplements the resolution and is expected to be issued in late 2013.

In 2002, GE cotton was approved and was the first biotech plant cultivated on a non-restricted commercial basis in Colombia. GE corn was approved in 2007 and has recently surpassed GE cotton adoption with area planted increasing to 75 thousand hectares in 2012. Also, GE Dutch blue carnations continue to be produced under greenhouse conditions for export to Europe as well as GE blue petal roses for exports to Japan.

Regarding animal biotechnology, Colombia continues to do some work on GE vaccines for animal diseases. (see appendix C).

Section VII. Author Defined:

CHAPTER 1: PLANT BIOTECHNOLOGY

PART A: Production and Trade

Product Development

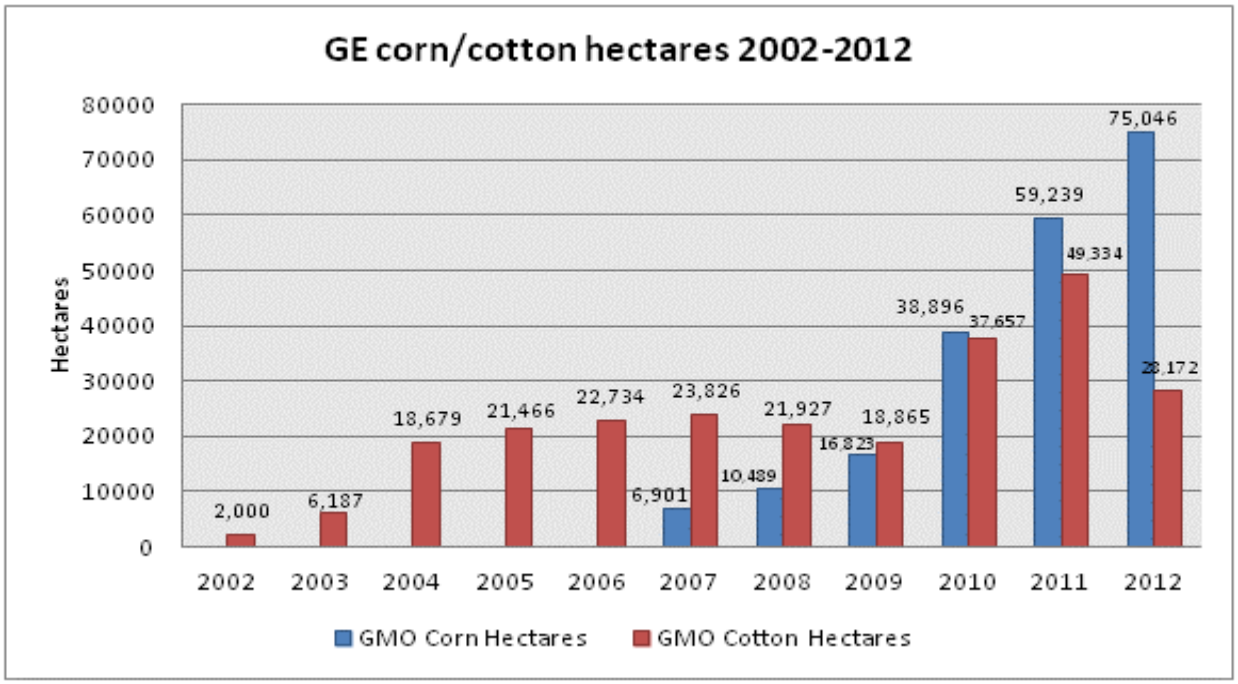
Colombia has not developed any biotechnology crops to date. There are several Colombian organizations conducting specific research projects. The Colombian sugar cane research center (CENICAÑA) is developing a sugar cane variety resistant to the yellow leaf virus. The International Center for Tropical Agriculture (CIAT) is researching GE rice and cassava. The Colombian Coffee Research Center (CENICAFE) is developing a coffee variety that is resistant to coffee borer (broca) and the International Corporation for Biological Research (CIB) is investigating potatoes resistant to some lepidopterous insects. Colombian universities and research institutes are working together to develop rice and potato biotechnology events. There is increasing GOC and farmer interest to expedite the

development of biotechnology events that enhance competitive benefits local crops that are sensitive to imports. All varieties of events that are developed must go through the standard approval process whether intended for human consumption and/or animal feed.

Commercial Production

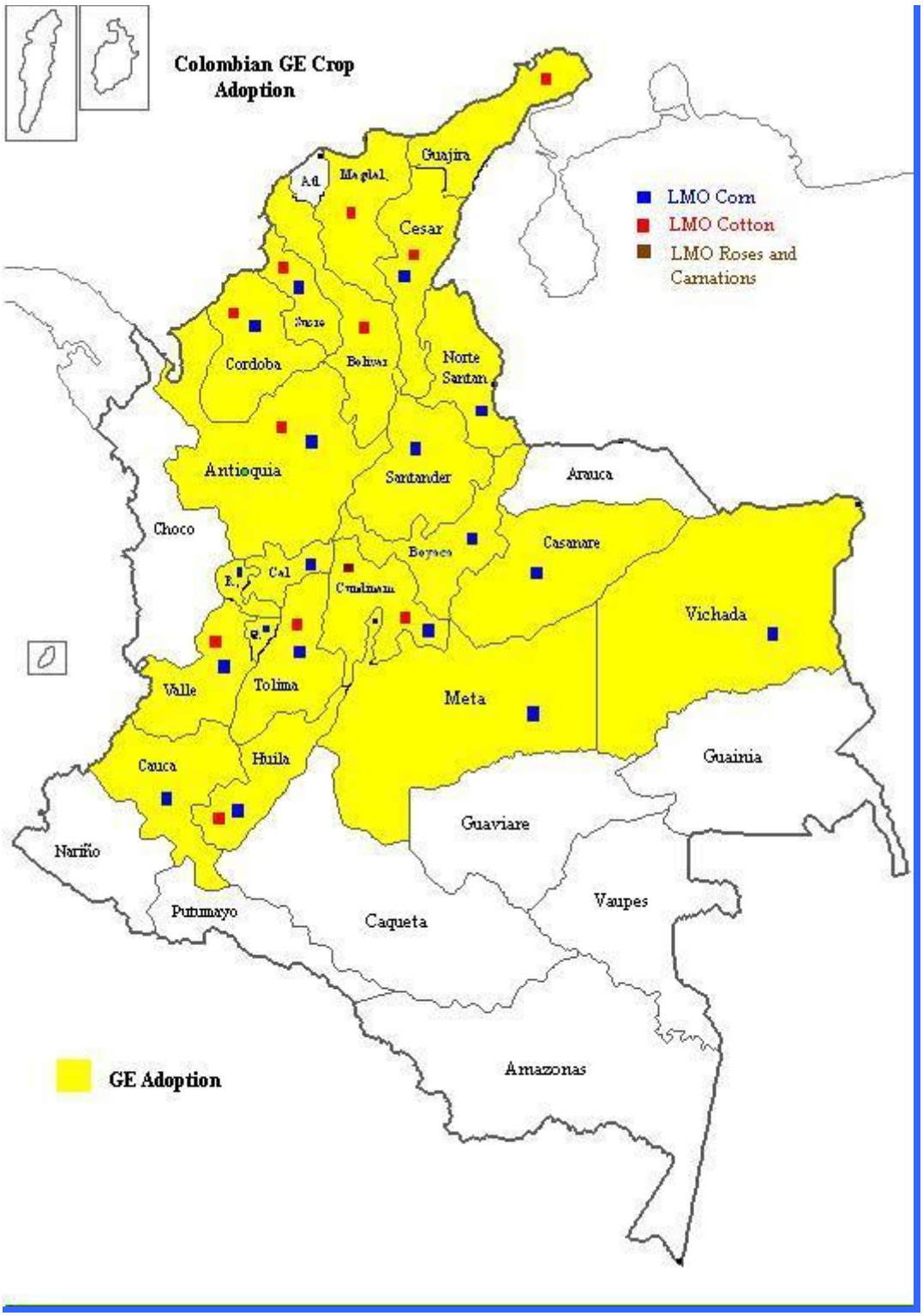
Prior to 2006, the only GE plants approved on a non-restricted commercial basis in Colombia were the cotton varieties Bollgard and Roundup-Ready. In February 2007, the GOC approved the first stacked event, a variety combining Bollgard and Roundup-Ready traits. The GOC also approved planting of GE corn. In 2010, GE soybean was approved for commercial cultivation; however, no area has yet to be planted. Biotech blue carnations and blue petal roses are approved for commercial production and only for export. Total area planted for these ornamental crops is 12 hectares each. In 2012, Colombia planted 75 thousand hectares of GE corn and 28 thousand hectares of GE cotton (see Chart 1 below). GE cotton area planted fell by 21 thousand hectares due to unfavorable growing conditions and low prices due to import competition. On the other hand, GE corn area planted increased 15,807 hectares with corn adoption expanding significantly since 2007, taking over GE cotton as the most widespread GE plant cultivated in Colombia. (See Charts 1 and 2)

Chart 1



Source: Colombian Institute for Agriculture and Livestock (ICA)

Chart 2



Source: Colombian Institute for Agriculture and Livestock (ICA)

In addition to the above-mentioned GE events, there are pending license applications for several other crops that are in varying phases of approval (see appendices A and B).

Exports

Dutch blue carnations continue to be produced under greenhouse conditions for export to Europe as well as blue petal roses for exports to Japan. In 2012, total area planted increased to 24 hectares, or 12 hectares for each ornamental crop. The production of blue petal roses will continue to be destined to the Japanese market where a rose of this kind will be sold for $40-$50 each.

Imports

GE seeds are imported mostly from the United States and occasionally from South Africa, Argentina and Australia (see appendices A and B for more details).

Food Aid Recipient Country

Colombia receives limited food aid from the United States. There are no biotech related restrictions on the food aid if the food product contains a GE event that is approved in Colombia for human consumption.

PART B: Policy

Regulatory Framework

The following Ministries are involved in the regulation of agriculture biotechnology and/or conducting risk assessments:

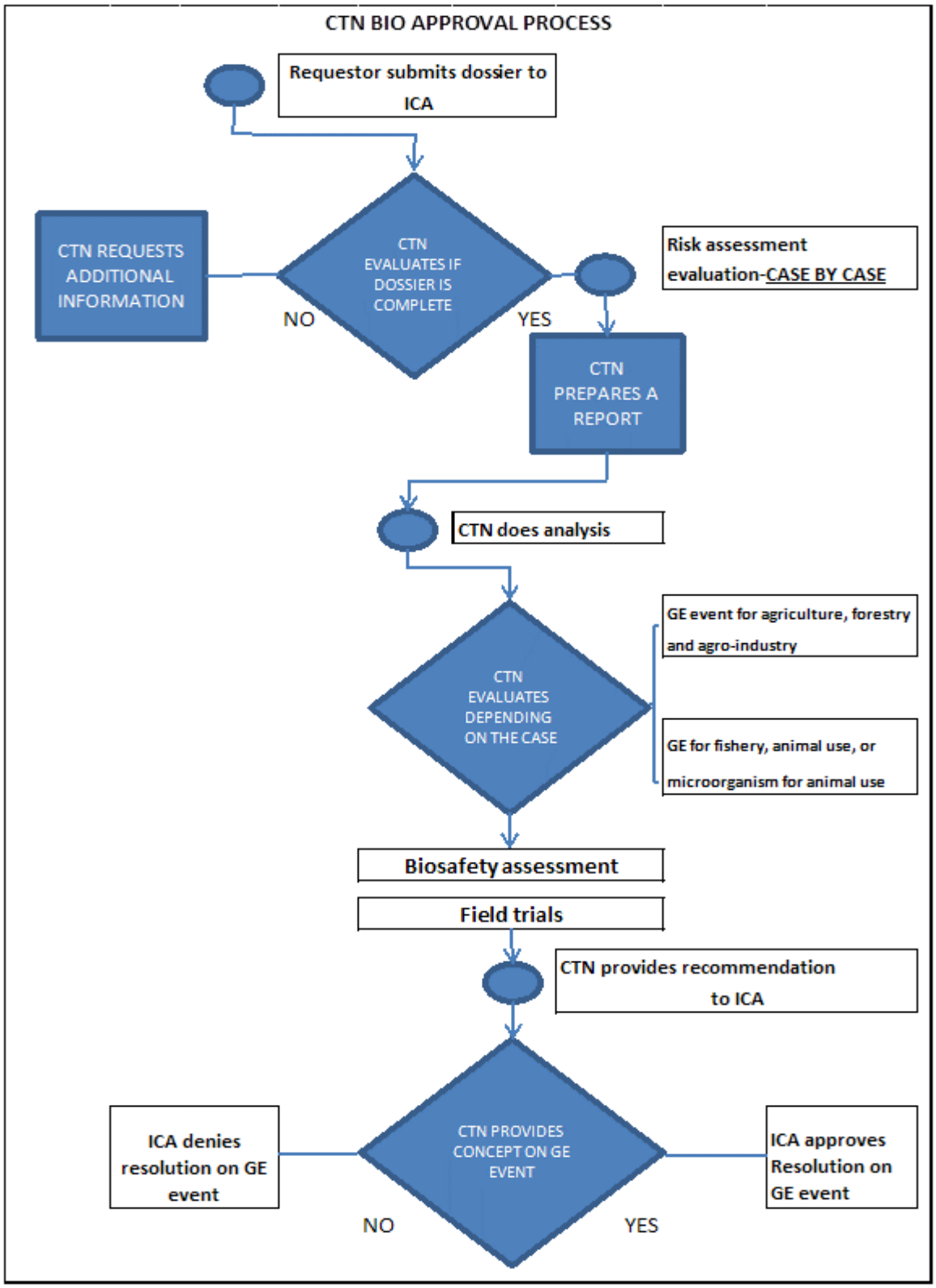
- Ministry of the Environment, Housing and Territorial Development (MEHTD);
- Ministry of Health and Social Protection (MHSP);
- Ministry of Agriculture and Rural Development (MARD);
- Colciencias (Colombian Entity for the Development of Science and Technology);
- National Institute for the Surveillance of Food and Medicines (INVIMA);
- Colombian Institute for Agriculture and Livestock (ICA).

The MARD is a strong supporter of agricultural biotechnology and is developing a regulatory framework to implement the CPB. The Ministry is considerate of the trade implications of the CBP and understands that the Protocol specifically focuses on trans border movement of any GE events resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity.

Decree 4525 of December 6, 2005, established three interagency committees composed of the above-mentioned Ministries that are responsible for biosafety issues and the evaluation and approval of biotech events:

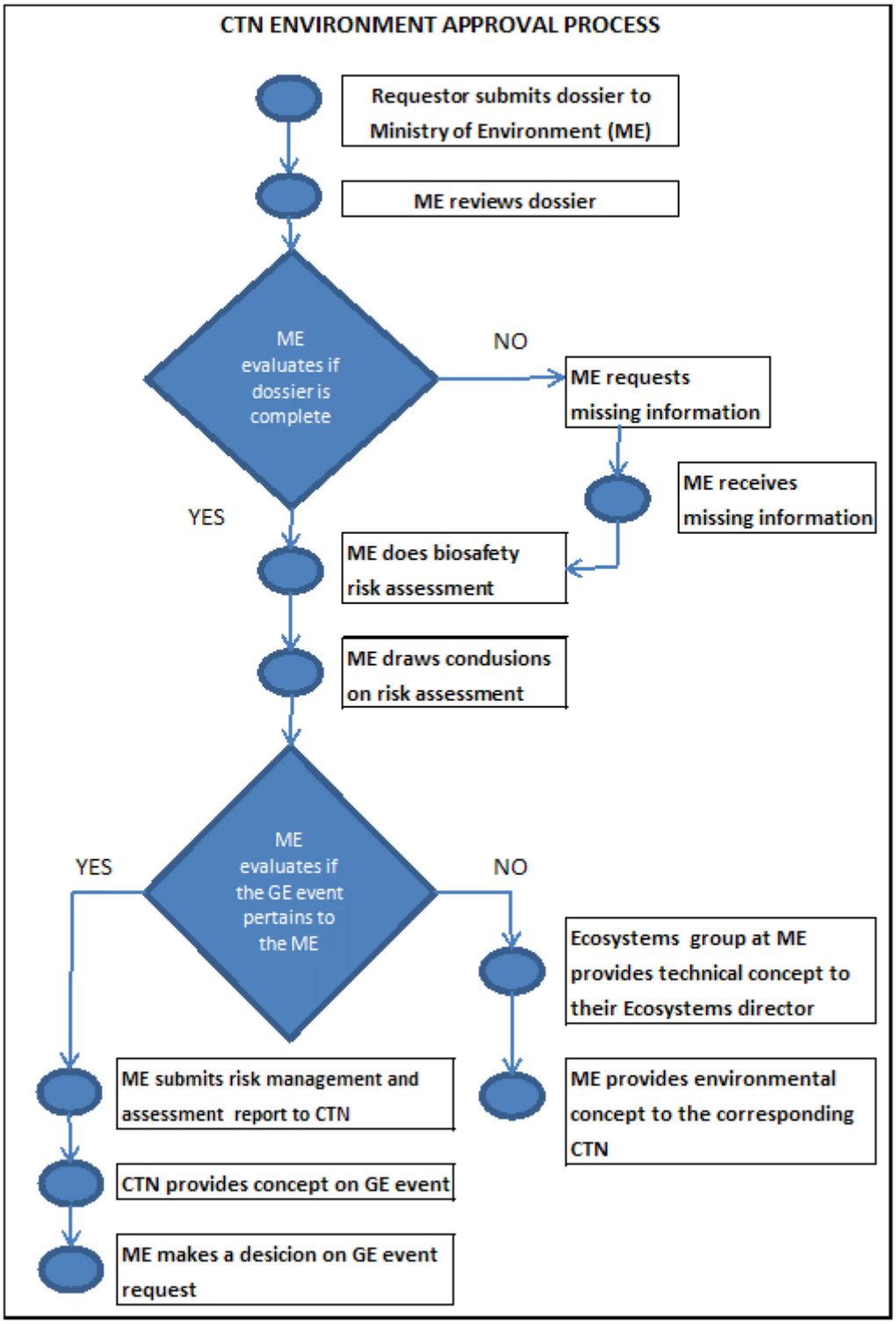
National Technical Committee for Agriculture, Fishery, Forestry and Agro-industry (CTN-Bio): CTN-Bio's role is to assess GE events for the listed sectors. Although the committee has been approving new-to-market GE products, the MEHTD has voiced concerns regarding the environmental impact of events. The time taken to conduct the risk assessment varies since all dissenting concerns by

the different ministries must be resolved before a product is approved. The graph below illustrates the CTN-Bio approval process:



Source: BCH Colombia www.bch.org.co (July 2012)

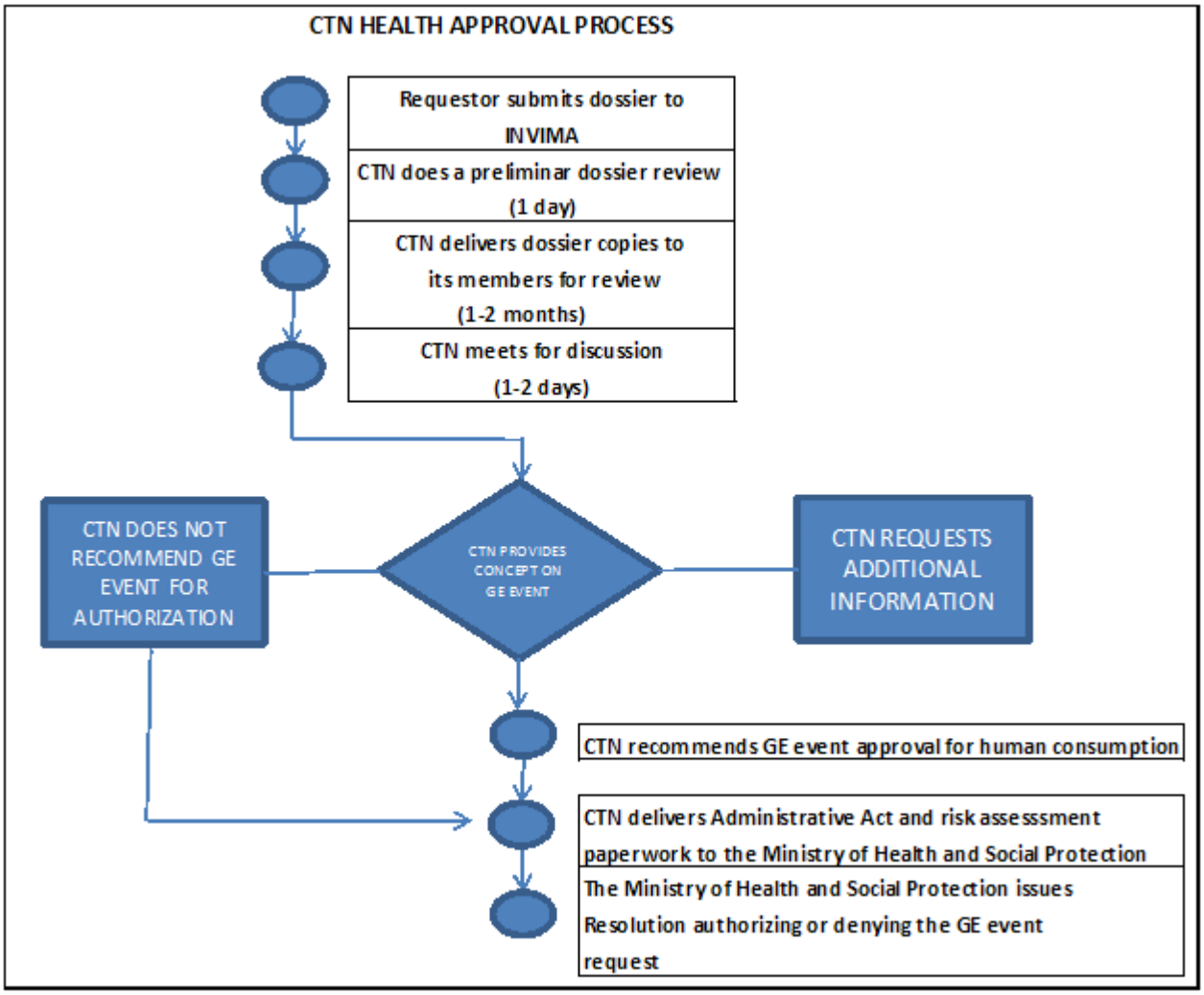
National Technical Committee for Environment (CTN-Environment): This committee's function is to assess biotechnology events for introduction of GE events that impact the environment. CTN-Environment has yet to receive any requests for review of GE events. However, in May 2010, the MEHTD issued resolution 957 establishing procedures on what companies must submit for evaluation and what the Ministry process of assessing GE events. The committee is now fully operational. The graph below illustrates the CTN-Environment approval process:



Source: BCH Colombia www.bch.org.co (July 2012)

National Committee for Health and Human Nutrition (CTN-Health): CTN-Health's function is to as assess the impact of genetically modified events in GE products and by-products on human health. On February 1, 2007 the Ministry of Health and Social Protection issued resolution 227 to establish the

functions of the committee making it fully operational. In fact, CTN-Health has submitted a number of recommendations for approval to the Ministry of Health and Social Protection which continues to take long to issue resolutions. However, the industry and the US Government are still pressing the Ministry to streamline their processes, thus creating room for a predictable timetable for issuing resolutions. The graph below illustrates the CTN-Heath approval process:



Source: BCH Colombia www.bch.org.co (July 2012)

Approvals

The Government of Colombia only allows approved biotech events for commercial cultivation/environmental release. The approval process requires each variety with a specific genetic trait to be approved. This process can be lengthy. Approvals for feed and food consumption are carried out separately by the CTN-Bio and CTN-Health, respectively. This parallel approval process can result in asynchronous circumstances, with some biotech events being approved for food, but not for feed, and others for cultivation, but not for food. See appendix B for more details.

Field Testing

Colombia allows field-testing for biotechnology crops (see appendix A) after a risk assessment is submitted to CTN-Bio for review and approval.

Stacked Events

Regarding "stacked" events, CTN-Bio requires additional or duplicative field testing. Even though the individual events may have already been approved, the "stacked" variety must go through the approval process. It is worth mentioning that stacked events (resistant to some lepidopterous pests and tolerant to Roundup herbicide) continue to be the variety mostly planted in Colombia.

Coexistence

There are no regulations for coexistence between biotechnology and non-biotechnology crops in Colombia. However, ICA has carried out an evaluation of cross-pollination on cotton and found that both GE and non-GE crops do coexist. Regardless, farmers actively apply the practice of buffer zones or a natural barrier of fallow terrain between the two plantings.

Labeling

The MHSP issued Resolution 4254 establishing the requirements for labeling of food derived from modern biotechnology. The resolution requires labeling information regarding product health and safety, such as potential allergenicity. Labeling must also address functionality or use of the food as well as the identification of significant differences in essential characteristics of the food. In addition to the resolution, the Colombian government is working on a Technical Annex which supplements the resolution and is expected to be issued in late 2013. Agricultural traders and the food industry that deal with biotech-derived commodities will have to comply with the new requirements to ensure shipments for human consumption entering Colombia are approved. Industry and commodity exporters have expressed their concerns as not all GE events in international commercial use have been approved in Colombia. This could potentially delay shipments. Regarding labeling for imported GE materials (seeds or other plant reproductive materials and animal products), ICA issued Resolution 946 of April 17, 2006, stating that imported GE materials should be labeled as "Genetically Modified Organisms" or in Spanish "ORGANISMO MODIFICADO GENETICAMENTE". This requirement is justified as a consumer-right-to-know obligation.

Intellectual Property Rights

Regarding intellectual property rights (IPR), Colombia follows the guidelines provided as a member of the following groups: the Paris Convention for the Protection of Industrial Property, the General Agreement on Tariffs and Trade (GATT), the International Union for the Protection of New Varieties of Plants (UPOV), the G3 Agreement between Mexico, Colombia and Venezuela, and the Andean Pact. As a member of the Andean Pact, Colombia adopted Decision 351- Common Provisions on the Protection of the Rights of Breeders of New Plant Varieties and Decision 391, Common Regime on Access to Genetic Resources. (Hodson & Carrizosa, 2007). In spite of the IPR regulatory framework, domestic and international biotech industries have reported that issues remain regarding patents for GE

technologies. The Colombian Patent Authority for Industry and Trade takes excessive time to grant patents causing the biotechnology industry to reduce the number of new technologies petitioned for use in Colombia. In addition to the lengthy process, the Colombian law pertaining intellectual property rights, Law 1032 of June 22, 2006, Article 306 for the usurpation of intellectual property is not being fully enforced. Industry sources claim that the lack of knowledge on the part of patent law judges regarding GE materials prevents the judicial system from making sound and timely decisions on biotech patents.

Cartagena Protocol Ratification

As a signatory (and host) to the CPB, Colombia approved the Biosafety Protocol through Law 740 in 2002, eventually being implemented in September 2003. To date, the regulations to implement the CPB supporting laws are outlined in decree 4525 of December 6, 2005; ICA resolution 1063 of March 22, 2005; ICA resolution 000946 of April 17, 2006; MHSP resolution 0227 of February 1, 2007 and MEHTD resolution 957 of May 19, 2010.

International Treaties/Fora

Colombia plays an active role in the discussions of the CPB Conference of the Parties as a signatory. In addition to CPB meetings, Colombia is also a signatory to the International Treaty on Plant Genetic Resources for Food and Agriculture, the International Plant Protection Convention (IPPC), and attends CODEX meetings to discuss issues on biotechnology.

Monitoring and Testing

In 2009, the GOC issued resolution 682 requiring GE seed companies to adopt a life cycle stewardship approach to accompany producers which had only been applied to cotton crops. In September 2010, a resolution was issued for handling GE corn which outlines the role for farmers and GE seed companies. Both resolutions have established a commercial road map for the two main GE crops in Colombia to ensure that the technology continues to be effective. Colombia is not actively testing for GE products. However, Government officials are considering port of entry testing at GOC laboratories for GE detection and surveillance to ensure exporters will comply with the Technical Annex upon implementation.

Low Level Presence

The Technical Annex will supplement Resolution 4254, requiring that GE events imported in Colombia, intended for human consumption, must be approved. Considering the lengthy amount of time that Colombian regulatory officials take to review and approve new GE events, the GOC has proposed a 2 percent LLP threshold to address asynchronous approvals; however, that threshold remains under review. The LLP threshold will only apply to GE events for food consumption and not feed raw materials.

PART C: Marketing

Market Acceptance

Biotechnology has existed in Colombia for the last 13 years. Most press coverage is favorable to biotechnology. To date, consumers have not voiced major concerns about GE products or products containing GE raw materials.

Public/Private Opinions

Although Colombia's approach to biotechnology has been favorable, some environmental groups are pressing government officials to reject biotech products. In addition, some indigenous groups have been inspired by NGOs to oppose the introduction of GE events based on biodiversity concerns. The GOC's structure for biotechnology regulations is based on science-based decisions of accepting or rejecting new biotechnology events. The basic principle is to adopt the technologies that may help the economic/social development of Colombia. The MEHTD has been the most controversial voice on biotechnology approvals.

Marketing Studies

A preliminary IFPRI study (Zambrano et al. 2011) on the benefits of biotech cotton for women indicates that it saved them time and money. However, there is lack of information on the various services related to biotech cotton. The study confirmed that the gender focus on women is an important aspect and needs more detailed study in Colombia, where women, play a key role as practitioners in biotech cotton production. (Excerpt from: James, Clive. 2011. Global Status of Commercialized Biotech/GM Crops: 2011. ISAAA Brief No. 43. ISAAA: Ithaca, New York).

PART D: Capacity Building and Outreach

Activities

FAS/Bogotá has been working together with different industry groups to disseminate information on the benefits of biotechnology and collaborating on the following activities:

- September 2003: Three leading Colombian journalists attended a biotechnology tour in the United States;
- July 2004: Two Colombian officials from ICA and Von Humboldt Institute attended a two-week "Biotech Short Course" on regulatory and trade issues at Michigan State University;
- August 2004: Farmer-to-Farmer Biotechnology Workshop was held at the University of Zamorano in Honduras, which a leading Colombian cotton producer and agricultural leader attended;
- February 2006: a Cochran candidate attended a tailor-made program in the United States on biotechnology;
- July 23-25 2007: FAS and State jointly sponsored a biotechnology conference for Government officials held in Bogota followed by meetings with research organizations in Cali;
- September 2007: 2 Cochran candidates from INVIMA attended biotechnology training in

Washington, St. Louis and Texas A&M;

- September 2008: FAS and State jointly sponsored a seminar for government officials, private sector, academia and producers associations to address issues regarding labeling of GE products, the implementation of the Cartagena Biosafety Protocol and environmental concerns;
- September 2008: FAS supported Agrobio (an association of private companies producing biotechnology products) in an effort to educate Latin American researchers on GE monitoring and detection;
- September 2009: FAS and the US Grains Council took two Colombian regulators one from the Ministry of Environment and the other one from Colciencias to visit regulators in Washington, D.C. and a visit Iowa to see biotechnology risk-management practices in the field;
- September 2009: A Colombian official from the Von Humboldt Institute attended a two-week "Biotech Short Course" on regulatory and trade issues at Michigan State University;
- July 2010: FAS and State jointly sponsored a visit from a scholar to speak on biotechnology during a three-day program in Bogota and Medellin. While in Bogotá, he addressed an audience on biotechnology and nutrition, gave a presentation to some media representatives and held a side meeting with the CTN Health to discuss policy issues. The itinerary in Medellin included two presentations at Agrofuturo, an annual event sponsored by the Ministry of Agriculture, where the speaker was able to discuss the benefits of biotechnology and food security
- July 2010: 3 Colombian officials from the Ministry of Environment, ICA and the Ministry of Social Protection attended the Biosafety short course in Michigan State University under the Cochran program;
- September 2010: 3 Colombian officials from ICA, the National University and Colciencias attended the Biotechnology short course in Michigan State University under the Cochran program;
- July 2011: FAS and State partnered with Agrobio, a NGO in charge of promoting biotechnology, and coordinated a visit of a biotechnology expert to conduct a media tour with Colombian journalists to Palmira, Villavicencio, Montería, Ibague and Bogota;
- August 2011: FAS coordinated with State a voluntary program on biotechnology and intellectual property rights for a group of 9 Colombian representatives from academia and associations to St. Louis, Davis, and Washington D.C;
- August 2012: FAS in collaboration with the USGC organized a visit of a team of government regulators in charge of implementing resolution 4254 on labeling law for GE products in Colombia and some representatives of the corn milling industry to attend a week program in Washington, D.C. and New Orleans;
- February 2013: First Colombian Borlaug fellow from FEDEARROZ, National Rice Producers Association, attended a 4 month biotechnology program at Georgia University;
- April 2013: FAS in collaboration with the USGC organized a visit of a team of government regulators and a group if industry representatives to a week program in Washington, DC and St. Louis to discuss LLP and trade impact;
- June 2013: FAS in collaboration with the USGC and ANDI, National Industries Association, organized a two day seminar to discuss low level presence as opposed to zero tolerance and the Mexican experience with grain trade.

Strategies and Needs

Colombia would greatly benefit with more aggressive educational efforts on biotechnology issues. Therefore, FAS/Bogota would like to continue working with appropriate US agencies to develop projects and programs that strengthen biotechnology knowledge and understanding. Some activities may include:

- Attendance to FAO LLP workshops and the Global LLP Initiative would assist GOC officials in making final decisions on LLP policy;
- An emphasis on the media by organizing a follow-up activity to the media tour in 2003 would help solve some of public misconceptions;
- Educational programs for GOC officials and researchers through Cochran and Borlaug will continue to strengthen biotechnology knowledge.

CHAPTER 2: ANIMAL BIOTECHNOLOGY

PART E: Production and Trade

Colombia has done limited work on animal biotechnology for developing pharmaceuticals and vaccines to be used for humans and animals (see appendix C). According to GOC officials, research is in the initial stages with an informal request of information and submission of a research proposal on GE bovine production of lactose free milk. Regarding human health, academia has submitted three proposed research projects on the use of GE mice for research. One proposal for GE mice is pending approval (see appendix B).

PART F: Policy

The Government of Colombia has established a regulatory framework for plant biotechnology that also applies to animal biotechnology. The three interagency committees that are responsible for evaluation and approval of plant biosafety issues are also responsible for GE animal approvals.

PART G: Marketing

Public knowledge of biotechnology is mostly related to plants. Animal biotechnology is not well known and gets little media attention.

APPENDIX A. COLOMBIA: CURRENT STATUS OF BIOTECHNOLOGY PRODUCTS

Crop	Requesting Company	New Characteristics of Biotechnology	Authorized Activity
Carnations ICA resolution 1219	Flores Colombianas Ltda. (Holland)	Blue Carnations	Approved in 2000 for commercial production of cut flowers for exports only. (green house conditions)
Carnations ICA resolution 3932	Flower Development (Holland)	Blue Carnations	Approved in 2008 for commercial production of cut flowers for exports only. (green house conditions)
Roses	Flower Development	Blue Petal Roses	Approved in 2009 for commercial production of cut flowers for

ICA resolution 3786	(Holland)		exports only. (green house conditions)
Chrysanthemum ICA resolution 3785	International Flower Development	Blue Chrysanthemum	Approved for experimental plantings in 2009 (green house conditions)
LLCotton25 ICA resolution 1037	Bayer CropScience	Tolerant to glufosinate ammonium herbicide	Approved in 2009 for agronomic field trials in the dry and humid Caribbean regions, upper Magdalena river (Tolima, Huila), Cauca river valley and eastern plains
Bollgard Cotton-MON 531	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects	Approved for commercial plantings since 2004 in the humid Caribbean region, the upper Magdalena river valley (Tolima and Huila) and Cauca river valley. Approved for commercial plantings in the dry Caribbean region in May, 2004
Roundup Ready Cotton-MON 1445	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide	Approved in 2004 for commercial plantings in the dry Caribbean and humid Caribbean regions. Approved in 2007 for commercial plantings in the upper Magdalena river valley(Tolima and Huila) and Cauca river valley
Bollgard/Roundup Ready Cotton-MON 531XMON 1445	COACOL-Monsanto (United States)	Resistant to a wider variety of lepidopterous insects and tolerant to Roundup herbicide.	Approved in 2007 for commercial plantings in the upper Magdalena river valley (Tolima and Huila) and Cauca river valley
Bollgard II and Roundup Ready Flex Cotton- MON 15985XMON 88913	COACOL-Monsanto (United States)	Resistant to a wider variety of lepidopterous insects and completely tolerant to Roundup herbicide	Approved in 2008 for commercial plantings
Roundup Ready Flex MON 88913 cotton ICA resolution 1258	COACOL-Monsanto (United States)	Tolerant to Round Up herbicide	Approved on 04/09/10 for commercial plantings for dry and humid Caribbean regions, Cauca river valley, upper Magdalena river valley and Orinoquia
Glytol and Liberty Link cotton ICA resolution 226	Bayer Cropscience	Tolerant to Round Up and ammonium herbicide	Approved in 2012 for field trials in dry and humid Caribbean regions, Cauca river valley, upper Magdalena river valley and Orinoquia
Rice	CIAT (Colombia)	Tolerant to draught	Approved in 2010 for field trials in Villavicencio, Meta
Rice	CIAT (Colombia)	Resistant to White Leaf virus	Approved in 2000 for restricted research and small-scale plantings in open fields, in accordance with risk assessment
Cassava	CIAT (Colombia)	Resistant to the borer of stem/stalk	Approved in 2000 for small-scale plantings in open fields per risk assessment
Cassava	CIAT (Colombia)	Modification of	Approved in 2000 for restricted

		cytokine production	research per risk assessment
Cassava	CIAT (Colombia)	Modification of amilopectin production	Approved in 2000 for restricted research per risk assessment
Cassava	CIAT (Colombia)	Modification of cyanide content	Approved in 2000 for restricted research per risk assessment
Brachiaria (grass)	CIAT (Colombia)	"frog hopper" resistant	Approved in 2000 for restricted research per risk assessment
Coffee	CENICAFE (Colombia)	Borer resistant	Approved in 2000 for restricted research per risk assessment
Potatoes ICA resolution 4469	Corporacion de Investigaciones Biologicas (CIB) (Colombia)	Resistant to Tecia solanivora)	Approved for field trials in Rio Negro, Antioquia in 2010
Tobacco ICA Resolution 2492	CENICAFE (Colombia)		Approved in 2010 for confined research
Fungus ICA Resolution 2492	CENICAFE (Colombia)		Approved in 2010 for confined research
Coffee plants "coffee Arabica" ICA Resolution 2492	CENICAFE (Colombia)		Approved in 2010 for confined research
Sugar cane	CENICAÑA (Colombia)	Resistant to the yellow leaf syndrome	Approved in 2005 for restricted research and small-scale plantings in open fields per risk assessment
Yieldgard Corn Mon 810 ICA resolution 3743	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects	Approved in 2007 for controlled plantings in the humid Caribbean region, upper Magdalena river (Tolima, Huila), Cauca river valley and eastern plains. Approved in 2008 for commercial plantings in the dry Caribbean and the Coffee region
Yieldgard Corn ICA resolution 3742	Dupont (United States)	Resistant to some lepidopterous insects	Approved in 2008 for controlled plantings in the dry Caribbean and the Coffee region
Yieldgard 2 Corn	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide	Risk assessment since 2005
Yieldgard VTPro Corn MON 89034	COACOL-Monsanto (United States)	Resistant to a wider variety of lepidopterous insects	Approved in 2007 for biosafety field trials in the dry and humid Caribbean regions, the Coffee region, upper Magdalena river valley (Tolima, Huila), Cauca river valley and eastern plains
Roundup Ready Corn (RR 2 corn) ICA resolution 3740	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide.	Approved in 2007 for controlled plantings in the humid Caribbean region (Cordoba), upper Magdalena river valley (Tolima, Huila), Cauca river valley and eastern plains. Approved in 2008 for controlled plantings in the dry

			Caribbean and the Coffee region
Roundup Ready Corn ICA resolution 3739	Dupont (United States)	Tolerant to Roundup herbicide.	Approved in 2008 for controlled plantings in the dry Caribbean and the Coffee region
Yieldgard VTPro X Roundup Ready 2 corn- MON 89034 X NK 603 ICA resolution 1851 and 225	COACOL-Monsanto (United States)	Resistant to a wider variety of lepidopterous insects and tolerant to Roundup herbicide.	Approved in 2011 for controlled plantings in the dry and humid Caribbean regions, upper Magdalena river valley (Tolima, Huila), Cauca river valley and eastern plains. Approved in 2012 for controlled plantings in the coffee region
Yieldgard X Roundup Ready Corn ICA resolution 3744	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide	Approved in 2007 for controlled plantings in the humid Caribbean region (Cordoba), upper Magdalena river valley (Tolima, Huila), Cauca river valley and eastern plains. Approved in 2008 for controlled plantings in the dry Caribbean and the Coffee region
Herculex I Corn ICA resolution 3741 ICA resolution 3575	Dupont (United States)	Resistant to some lepidopterous insects	Approved in 2007 for controlled plantings in the humid Caribbean region (Cordoba), upper Magdalena river valley (Tolima, Huila), Cauca river valley and eastern plains. Approved in 2008 for controlled plantings in the coffee region. Approved in 2012 for controlled plantings in the Dry Caribbean.
Herculex I X Roundup Ready corn ICA resolution 3745	Dupont (United States)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide	Approved for controlled plantings in the humid Caribbean region, Cauca river valley and eastern plains. Approved in 2008 for controlled plantings in the coffee region
Herculex RW corn ICA resolution 4469	Dupont (United States)	Tolerant to glufosinate	Approved in 2010 for biosafety and agronomic trials in the humid and dry Caribbean region, Upper Magdalena river valley, Cauca river valley, Orinoquia and the coffee region
Herculex I X Roundup Ready corn ICA resolution 3738	Dow AgroSciences de Colombia S.A.	Resistant to some lepidopterous insects and tolerant to Roundup herbicide	Approved in 2008 for controlled plantings in the coffee region
Bt 11 corn ICA resolution 1679 ICA resolution 3787	Syngenta (Switzerland)	Resistant to some lepidopterous insects	Approved in 2008 for controlled plantings in the humid Caribbean region and Cauca river valley. Approved in 2009 for controlled plantings in Magdalena river valley and eastern plains
CCR corn-MON 88017	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide and resistant to rootworm	Approved for biosafety trials
GA 21 corn	Syngenta (Switzerland)	Tolerant to Roundup gene epsps	Approved in 2010 for controlled plantings in the humid and dry

ICA resolution 2936			Caribbean region, Upper Magdalena river valley, Cauca river valley and Orinoquia
Bt 11 X GA 21 corn ICA resolution 3915	Syngenta (Switzerland)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide	Approved in 2010 for controlled plantings in the humid Caribbean region, Upper Magdalena river valley, Cauca river valley and Orinoquia
MON 89034-3 x MON 00603-6 corn ICA resolution 1036	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide, resistant to some lepidopterous insects	Approved on 03/16/09 for biosafety field trials in the humid and dry Caribbean region, Upper Magdalena river valley, Cauca river valley and Orinoquia
MIR162 (SYN-IR162-4) corn ICA resolution 3574	Syngenta (Switzerland)	Resistant to some lepidopterous insects	Approved on 09/28/12 for controlled plantings for humid Caribbean regions, and Orinoquia
MON VT Triple PRO (VT3P) (MON 89034 X MON 88017) corn ICA resolution 1260	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide, resistant to rootworm	Approved on 03/16/09 for biosafety field trials in the humid and dry Caribbean region, Magdalena river valley, Cauca river valley and Orinoquia
Bt11x MIR162 x MIR604 x GA21 corn ICA resolution 3572	Syngenta (Switzerland)	Tolerant to herbicide and resistant to insects	Approved on 09/28/2012 for biosafety trials and agronomic assessment in the dry and humid Caribbean regions, upper Magdalena river valley (Tolima, Huila), Cauca river valley, Orinoquia and coffee region
Roundup Ready soybean ICA resolution 1035 ICA resolution 2404 ICA resolution 227	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide	Approved in 2009 for biosafety field trials in the dry and humid Caribbean regions, upper Magdalena river valley (Tolima, Huila), and Cauca river valley. Approved for controlled plantings on 07/19/2010 in Orinoquia and on 02/02/2012 in Cauca river valley

APPENDIX B. COLOMBIA: CURRENT STATUS OF BIOTECHNOLOGY PRODUCT APPLICATIONS FOR FOOD, FEED and HEALTH

Crop	**Requesting Company**	**New Characteristics of Biotechnology**	**Approved Applications**	**Approval Date**
Bollgard cotton-MON 531 SEABA ACT	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects	Raw material for food and feed	06/24/2004 06/08/2003
Roundup Ready cotton-MON 1445 SEABA ACT V	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide	Raw material for food and feed	11/12/2003 10/27/2003
Bollgard II cotton-MON 15985	COACOL-Monsanto	Resistant to some lepidopterous insects	Raw material for feed and	Approved for food on

MSP resolution 4584	(United States)		food	11/26/2009
Roundup Ready Flex cotton-MON 88913 MSP resolution 4582 ICA resolution 311	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide and to a wider spectrum of weeds	Raw material for feed and food	Approved for food on 11/26/2009 Approved for feed on 11/02/2008
LL Cotton 25 ICA resolution 307	Bayer CropScience	Tolerant to Roundup herbicide	Raw material for feed	Approved for feed on 02/11/2008
Bollgard II+Roundup Ready Flex cotton-MON 15985XMON 88913 MSP resolution 2390 ICA resolution2944	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects, tolerant to Roundup herbicide and to a wider spectrum of weeds	Raw material for feed and food	Approved for food on 06/24/2010 Approved for feed on 11/06/2007
GHB 614 Glytol cotton ICA resolution 3567	Bayer CropScience	Tolerant to herbicide	Raw material for feed	Approved for feed on 09/28/2012
Bollgard+Roundup Ready cotton-MON 531XMON 1445 MSP resolution 2179 ICA resolution 2943	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide	Raw material for food and feed	Approved for food on 06/16/2008 Approved for feed on 11/06/2007
Yieldgard corn-MON 810 SEABA ACT V	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects	Raw material for food and feed	10/27/2003 02/26/2004
Roundup Ready corn-MON 603 SEABA ACT II	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide	Raw material for food and feed	03/29/2004 12/15/2006
Yieldgard Rootworm corn CRW	COACOL-Monsanto (United States)	Resistant to rootworm		Pending ICA's approval for feed. Pending Ministry of Social Protection's approval for food
Yieldgard+Roundup Ready corn-MON 810XNK 603 MSP resolution 4583	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide	Raw material for feed and food	Approved for feed on 06/04/2007 and for food on 11/26/2009
Bt Herculex I corn-DAS 01507-1 SEABA ACT V	Dupont (United States)	Resistant to some lepidopterous insects	Raw material for food and feed	Approved on 10/17/2006 12/15/2006
Herculex I X Roundup Ready corn-DAS 1507X MON 603 MSP resolution 4581 ICA resolution 3665	Dupont (United States)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide	Raw material for food and feed	Approved for food on 11/26/2009 Approved for feed on 09/16/2011

Herculex I X Roundup Ready corn-TC 1507XNK 603 ICA resolution 3083 MSP resolution 506	Dupont (United States)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide	Raw material for feed and food	Approved for feed on 08/18/2009 Approved for food in 2010
Herculex RW corn-DAS 59122 ICA resolution 4473 MSP resolution 1708	Dupont (United States	Resistant to some lepidopterous insects	Raw material for feed and food	Approved for feed on 12/27/2010 Approved for food on 5/18/2011
Yieldgard+Lysine corn-MON 810X LY 038	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects. High lysine content	Raw material for feed	Approved for feed
Yieldgard II corn	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects	Raw material for feed	Approved for feed
Yieldgard VTPro corn-MON 89034 MSP resolution 2394 ICA resolution 2367	COACOL-Monsanto (United States)	Resistant to a wider variety of lepidopterous insects	Raw material for feed and food	Approved for food on 6/24/2010 Approved for feed on 08/28/2007
MON VT Triple PRO (VT3P) (MON 89034 X MON 88017) corn MSP resolution 1710 ICA resolution 3661	COACOL-Monsanto (United States)	Resistant to a wider variety of lepidopterous insects	Raw material for food and feed	Approved for food on 5/18/2011 Approved for feed on 9/16/2011
Yieldgard VTPro Corn X Roundup Ready 2-MON 89034 X NK 603 ICA resolution 3659 MSP resolution 3659	COACOL-Monsanto (United States)	Resistant to a wider variety of lepidopterous insects and tolerant to Roundup herbicide	Raw material for feed and food	Approved for feed on 9/16/2011 Approved for food on 6/29/2010
CCR corn-MON 88017 MSP resolution 1712 ICA resolution 1254	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide	Raw material for feed and food	Approved for food on 5/18/2011 Approved for feed on 04/09/2010
CRW corn-MON 863 MSP resolution 1711	COACOL-Monsanto (United States)	Resistant to rootworm	Raw material for food	Approved for food on 05/24/2011. Pending ICA's approval for feed
Yieldgard+CCR corn-MON 810X MON 88017 MSP resolution 1904	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects, rootworm and tolerant to Roundup herbicide	Raw material for food and feed	Approved for food on 05/27/2011. Approved for feed on 09/16/2011

ICA resolution 3667				
Lysine corn-LY p38 MSP resolution 4585 ICA resolution 2405	COACOL-Monsanto (United States)	High lysine content	Raw material for food and feed	Approved for food on 11/26/2009. Approved for feed on 07/19/2010
Bt 11 corn MSP resolution 1078 ICA resolution 309	Syngenta (Switzerland)	Resistant to some lepidopterous insects	Raw material for food and feed	Approved for food on 4/13/2009 Approved for feed on 02/11/2008
GA 21 corn ICA resolution 2402 MSP resolution 1692	Syngenta (Switzerland)	Tolerant to Roundup herbicide	Raw material for feed and food	Approved for food on 06/27/2012 Approved for feed on 07/19/2010
Bt 11 X GA 21 corn ICA resolution 4474 MSP resolution 1695	Syngenta (Switzerland)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide	Raw material for feed and food	Approved for feed on 12/27/2010. Approved for food on 06/27/2012
MON 88017 corn-MON 88017 ICA resolution 1254 MSP resolution 1712	COACOL-Monsanto (United States)	Resistant to root worm and tolerant to Roundup herbicide.	Raw material for feed and food	Approved for feed on 04/09/2010 and approved for food on 05/18/2011
Smartstax corn -Mon 89034 X TC1507 X MON 88017 X DAS59122-7 MSP resolution 2393 ICA resolution 3662	COACOL-Monsanto (United States) and Dow Agrosciences	Resistant to some lepidopterous insects, to root worm and tolerant to Roundup herbicide and to glufosinate	Raw material for food and feed	Approved for food on 6/24/2010 and for feed on 09/16/2011
MIR 162 corn ICA resolution 4471 MSP resolution 1693	Syngenta (Switzerland)	Resistant to some lepidopterous insects	Raw material for feed and food	Approved for food on 6/27/2012. Approved for feed on 12/27/2010
BT 11xMIR 162xGA21 corn ICA resolution 2407 MSP resolution 1694	Syngenta (Switzerland)	Resistant to some lepidopterous insects nad tolerant to herbicides	Raw material for feed and food	Approved for feed on 07/19/2010. Approved for food on 06/27/2012
MON 87460 corn MSP resolution 1709 ICA resolution 224	COACOL-Monsanto (United States)	Tolerant to drought	Raw material for food and feed	Approved for food on 05/18/2011 Approved for feed on 02/02/2012
MON 863-5 corn	COACOL-	Resistant to some	Raw material	Approved for

ICA resolution 4475 MSP resolution 1711	Monsanto (United States)	lepidopterous insects	for feed and food	feed on 12/27/2010 Approved for food on 5/18/2011
Herculex RW-DAS corn 59122 MSP resolution 1708 ICA resolution 4473	Dow Agrosciences	Root worm resistant	Raw material for food and feed	Approved for food on 05/18/2011. Approved for feed on 12/27/2010
BT 11 X MIR 162X MIR 604X GA 21 corn MSP resolution 119	Syngenta (Switzerland)	Root worm resistant and tolerant to herbicides	Raw material for food	Approved for food on 01/26/2012
BT 11 X MIR 604 corn MSP resolution 120	Syngenta (Switzerland)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide	Raw material for food	Approved for food on 01/26/2012
MIR 604 corn MSP resolution 118 ICA resolution 229	Syngenta (Switzerland)	Root worm resistant	Raw material for food and feed	Approved for food on 01/26/2012 Approved for feed on 02/02/2012
MIR 604 X GA 21 corn ICA resolution 230	Syngenta (Switzerland)		Raw material for feed	Approved for feed on 02/02/2012
BT 11XMIR 604X GA 21 corn ICA resolution 232	Syngenta (Switzerland)	Resistant to some lepidopterous insects and tolerant to herbicide	Raw material for feed	Approved for feed on 02/02/2012
Liberty Link corn-T25 MSP resolution 121 ICA resolution 3666	Bayer Cropscience (United States)	Tolerant to Roundup herbicide	Raw material for food and feed	Approved for food on 01/26/2012 Approved for feed on 09/16/2011
T25 XMON 810 corn	Bayer Cropscience (United States)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide	Raw material for food	Approved for food on 01/26/2012
T25 X NK 603 corn MSP resolution 115 ICA resolution 228	COACOL-Monsanto (United States)	Tolerant to herbicide	Raw material for food and feed	Approved for feed on 02/02/2012 Approved for food on 01/26/2012
DAS 1507XMON 810 corn MSP resolution 1487 ICA resolution 3573	DUPONT	Resistant to some lepidopterous insects	Raw material for food and feed	Approved for food on 06/13/2012 Approved for feed on 09/28/2012
DAS 1507XMON 810X MON 603 corn	DUPONT	Resistant to some lepidopterous insects and tolerant to	Raw material for food and feed	Approved for food on 06/13/2012

MSP resolution 1488 ICA resolution 3571		herbicide		Approved for feed on 09/28/2012
DAS 1507X DAS 59122X MON 603 corn MSP resolution 1486 ICA resolution 3579	DUPONT	Resistant to some lepidopterous insects and tolerant to herbicide	Raw material for food and feed	Approved for food on 06/13/2012 Approved for feed on 09/28/2012
Roundup Ready wheat *1-MON 71800 SEABA ACT II	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide	Raw material for food	Approved for food on 3/29/2004
Roundup Ready soybeans-MON 04032-6/GTS 40302 SEABA ACT VII ICA resolution 2942	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide	Raw material for food and feed	Approved for food on 12/9/2005 Approved for feed on 11/06/2007
Roundup Ready 2Yield soybeans-MON 89788 ICA resolution 1256 MSP resolution 2391	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide	Raw material for feed and food	Approved for feed on 04/09/2010. Approved for food on 06/24/2010
GAT Soybeans- DP 356043 MSP resolution 2392 ICA resolution 2406	Dupont (United States		Raw material for food and feed	Approved for food on 6/24/2010. Approved for feed on 7/19/2010
GAT Soybeans 356043-5 ICA resolution 2894 MSP resolution 2392	Dupont (United States	Tolerant to Roundup herbicide	Raw material for feed and feed	Approved for feed on 07/19/2010 Approved for food in 2010
MON 87701X MON 89788 soybeans MSP resolution 116 ICA resolution 3663	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide	Raw material for food and feed	Approved for food on 01/26/2012. Approved for feed on 09/16/2011
Glycine Max soybean-CV 127 MSP resolution 117 ICA resolution 3668	Basf Inc	Tolerant to Roundup herbicide	Raw material for food and feed	Approved for food on 01/26/2012. Approved for feed on 09/16/2011
MON 89788 soybeans MSP resolution 2391	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide	Raw material for food	Approved for food on 06/24/2010
MON 87705 soybean ICA resolution 3566	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide	Raw material for feed	Approved for feed on 09/28/2012
MON 87769 soybean	COACOL-Monsanto	Tolerant to Roundup herbicide	Raw material for feed	Approved for feed on

ICA resolution 3565	(United States)			09/28/2012
A5547 soybean ICA resolution 3564	Bayer CropScience	Tolerant to herbicide	Raw material for feed	Approved for feed on 09/28/2012
A2704 soybean ICA resolution 3579	Bayer CropScience	Tolerant to herbicide	Raw material for feed	Approved for feed on 09/28/2012
Roundup Ready sugar beet-H7-1/KM 0071 ICA resolution 1255 SEABA ACT VII	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide	Raw material for food and feed	Approved on 12/9/2005 for food. Approved on 04/09/2010 for feed
Liberty-link rice LLRice62 MSP resolution 3674	Bayer CropScience (United States)	Tolerant to herbicide	Raw material for food and feed	Approved for food on 9/26/2008 Approved for feed on 02/11/2008
LLRice601 MSP resolution 5333	Bayer CropScience (United States)	Tolerant to herbicide	Raw material for food	Approved on 12/26/2008
Mice 3XTg AD MSP resolution 2836	Universidad de Antioquia		Controlled health research	Approved on 7/30/2008
Mice ApoE-/- 6 Apoe "knock out" MSP resolution 2835	Universidad de Antioquia		Controlled health research	Approved on 7/30/2008

APPENDIX C. COLOMBIA: CURRENT STATUS OF BIOTECHNOLOGY PRODUCT APPLICATIONS FOR ANIMAL USE

Description	**Requesting Company**	**Species**	**Approved Applications**	**Approval Date**
Small pox vaccine-Vectomune FP-LT ICA resolution 3739	Vetiplus Ltda	Poultry	Small pox	12/15/2006
Small pox vaccine-Vectomune FP-MG ICA resolution 561	Vetiplus Ltda	Poultry	Small pox	03/13/2007
Vaxxitek HVT+IBD ICA resolution 2946	Carval de Colombia	Poultry	Marek and Bolsa disease	11/06/2007
Innovax ND-SB Virus Serotypes 2 and 3. Poultry recombinant vaccine ICA resolution 1250	Intervet Colombia Ltda	Poultry	Marek disease and Newcastle disease	04/09/2010
Poultry Anigen AIV Ab Elisa Kit ICA Resolution 1251	Annar DiagnostICA Import S.A.S	Poultry	Avian Influenza	04/09/2010
Poulvac E. Coli	Wyeth Inc	Poultry	Avian Colibacillosis	

poultry inactivated subunit vaccine ICA resolution 1252				04/09/2010
Innovax ILT poultry recombinant vaccine ICA resolution 1253	Intervet Colombia Ltda	Poultry	Marek's disease and Laryngotracheitis	04/09/2010
Poultry recombinant vaccine ICA resolution 2399	Vetiplus S.A.	Poultry	Marek and Gumboro disease	07/19/2010
Poultry recombinant vaccine ICA resolution 2400	Vetiplus S.A.	Poultry	Marek and Newcastle disease	07/19/2010
Innofusion ND ICA resolution 5990	Intervet Colombia Ltda	Poultry	Marek and Newcastle disease	12/31/2012
Vectormune FP-LT-EC Vaccine ICA resolution 4125	Vetiplus S.A.	Poultry	Laryngotracheitis and smallpox	10/28/2011
Vectorvac FP-LT ICA resolution 5988	Amerivet SAS	Poultry	Laryngotracheitis and smallpox	12/31/2012
Ingelvac-CircoFlex ICA resolution2945	Boehringer-Ingelheim	Swine	Circovirus type 2	11/06/2007
Vaccine ICA resolution 3318	Suvaxyn PCV2	Swine	Circovirus type 1	09/24/2008
Porcillis inactivated subunit vaccine ICA resolution 1227	Intervet Colombia Ltda	Swine	Circovirus type 2	2009
Vaccine ICA resolution 4472	Intervet Colombia Ltda	Swine	Neonatal entrerotoxicosis	12/27/2010
Porcillis PCV ICA resolution 5987	Intervet Colombia Ltda	Swine		12/31/2012
Circumvent PCV M ICA resolution 5989	Intervet Colombia Ltda	Swine	Protection for both circovirus and Mycoplasma hyopneumoniae	12/31/2012
Anigen Rapid E. diagnostic kit ICA resolution 4470	Annar Diagnostica Import S.A.S	Dogs	Immunochromatography diagnostic kit	12/27/2010
Feline immunodeficiency and leukemia virus diagnostic kit ICA resolution 2401	Annar Diagnostica Import S.A.S	Felines	Feline immunodeficiency and leukemia virus	07/19/2010

Leucogen ICA resolution 4126	Virbac Colombia Ltda.	Felines	Leukemia	10/28/2011
Synbiotics La-EZ/EIA Elisa diagnostic kit	ADN Internacional S.A.	Equines	Equine infectious anemia	2012